

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

RESOLUTION NO. R5-2009-XXXX

AMENDING WASTE DISCHARGE REQUIREMENTS
ORDER NO. R5-2005-0030 (NPDES PERMIT NO. CA0077712)
AND CEASE AND DESIST ORDER NO. R5-2008-0010
FOR THE
CITY OF AUBURN
WASTEWATER TREATMENT PLANT
PLACER COUNTY

The California Regional Water Quality Control Board, Central Valley Region (hereafter Regional Water Board) finds:

1. On 17 March 2005, the Regional Water Board adopted Waste Discharge Requirements (WDR) Order No. R5-2005-0030, prescribing WDRs for the City of Auburn (hereafter Discharger), Wastewater Treatment Plant (hereafter Facility), Placer County.
2. The Discharger owns and operates a wastewater collection, treatment, and disposal system, and provides sewerage service to the City of Auburn with a population of approximately 13,000. Tertiary treated wastewater is discharged to Auburn Ravine, a tributary to the Sacramento River via the East Side Canal and Natomas Cross Canal. The design average dry weather flow capacity is 1.67 million gallons per day (MGD).
3. WDR Order No. R5-2005-0030 contains final effluent limitations for several constituents, including aluminum, copper, lead, nickel, silver, and zinc. Since the adoption of Order No. R5-2005-0030, the Regional Water Board has updated its interpretation of narrative surface water objective in the Water Quality Control Plan for the Sacramento River and San Joaquin River Basins (Basin Plan). Therefore, the Discharger has requested that Order No. R5-2005-0030 be modified to reflect the updated Regional Water Board interpretation of the Basin Plan narrative objective, specifically in regards to implementation of criteria for aluminum and hardness-based metals (i.e., copper, lead, zinc, nickel, and silver), in order to avoid costly and unnecessary mandatory minimum penalties (MMPs).
4. In Order No. R5-2005-0030, reasonable potential to exceed water quality criteria for hardness-based metals was determined using the worst-case (i.e., lowest) observed hardness of 11 mg/L, which occurred in the upstream receiving water on 27 June 2002. As a result of the calculation of criteria using the lowest observed receiving water hardness, reasonable potential was established for copper, lead, nickel, silver, and zinc. Therefore, the Regional Water Board established floating effluent limitations for these parameters. Compliance with floating limitations for these parameters was to be determined using downstream receiving water hardness taken at the time of the effluent sample.

Effluent limitations for the discharge must be set to protect the beneficial uses of the receiving water for all discharge conditions. In the absence of the option of including condition-dependent, "floating" effluent limitations that are reflective of actual hardness conditions at the time of discharge, effluent limitations must be set using a reasonable worst-case condition in order to protect beneficial uses for all discharge conditions. The Policy for

Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (also referred to as the State Implementation Plan, or SIP) does not address how to determine hardness for application to the equations for the protection of aquatic life when using hardness-dependent metals criteria. It simply states, in Section 1.2, that the criteria shall be properly adjusted for hardness using the hardness of the receiving water. The California Toxic Rule (CTR) requires that, for waters with a hardness of 400 mg/L (as CaCO_3), or less, the actual ambient hardness of the surface water must be used. It further requires that the hardness values used must be consistent with the design discharge conditions for design flows and mixing zones.¹ The CTR does not define whether the term “ambient,” as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions.

The point in the receiving water affected by the discharge is downstream of the discharge. As the effluent mixes with the receiving water, the hardness of the receiving water can change. Therefore, it is appropriate to use the ambient hardness downstream of the discharge that is a mixture of the effluent and receiving water for the determination of the CTR hardness-dependent metals criteria. Recent studies indicate that using the lowest recorded receiving water hardness for establishing water quality criteria is not always protective of the receiving water under various mixing conditions (e.g., when the effluent hardness is less than the receiving water hardness). The studies evaluated the relationships between hardness and the CTR metals criterion that is calculated using the CTR metals equation. The equation describing the total recoverable regulatory criterion, as established in the CTR, is as follows:

$$\text{CTR Criterion} = e^{m[\ln(H)]+b} \quad (\text{Equation 1})$$

Where:

H = Design Hardness

b = metal- and criterion-specific constant

m = metal- and criterion-specific constant

The constants “m” and “b” are specific to both the metal under consideration, and the type of total recoverable criterion (i.e., acute or chronic). The metal-specific values for these constants are provided in the CTR at paragraph (b)(2), Table 1.

The relationship between the Design Hardness and the resulting criterion in Equation 1 can exhibit either a downward-facing (i.e., concave downward) or an upward-facing (i.e., concave upward) curve depending on the values of the criterion-specific constants. The curve shapes for acute and chronic criteria for the metals are as follows:

Concave Downward: copper, nickel, and zinc

Concave Upward: lead and silver (acute)

¹ See 40 CFR 131.38(c)(4)(i)

For those metals where the regulatory criteria exhibit a concave downward relationship as a function of hardness, use of the lowest recorded effluent hardness for establishment of water quality objectives represents the worst-case receiving water hardness and is fully protective of all beneficial uses regardless of whether the effluent or receiving water hardness is higher. Use of the lowest recorded effluent hardness is also protective under all possible mixing conditions between the effluent and the receiving water (i.e., from high dilution to no dilution). The effluent hardness has ranged from 38 mg/L to 100 mg/L, based on 36 samples taken between August 2005 and July 2008. The variability in effluent hardness can be contributed to, in part, the fact that until recently, the Discharger manually added lime on an as-need basis to improve the performance of the denitrification system, which results in higher effluent hardness. While no formal correlation between the performance of the denitrification system and effluent hardness has been identified, the Discharger has observed that the denitrification system does not perform well when the effluent hardness is less than 50 mg/L, and that the denitrification system works optimally when the effluent hardness is greater than 75 mg/L. In October 2008, the Discharger installed a dedicated lime storage and feed system to ensure adequate denitrification. In order to assure adequate denitrification, but also to prevent additional solids in the treatment system, the Discharger intends to operate the lime storage and feed system to achieve an effluent hardness of 75 mg/L. Based on the recent upgrades to the treatment system, the Discharger has requested that criteria be calculated using an effluent hardness of 75 mg/L. However, because monitoring data is not available that indicates that the Discharger can reliably maintain the effluent hardness at or above 75 mg/L, for copper, nickel, and zinc water quality criteria were calculated using the lowest observed effluent hardness of 38 mg/L as CaCO_3 .

For those metals where the regulatory criteria exhibit a concave upward relationship as a function of hardness, water quality objectives based on either the effluent hardness or the receiving water hardness alone, would not be protective under all mixing scenarios. Instead, both the hardness of the upstream receiving water and the effluent is required to determine the reasonable worst-case ambient hardness of the fully mixed receiving water. In this case, using the lowest upstream receiving water hardness is protective if the effluent hardness is ALWAYS higher than the receiving water hardness. Under circumstances where the effluent hardness is not ALWAYS higher than the receiving water hardness, it may be appropriate to use the highest reported upstream receiving water hardness in Equation 2. Under circumstances where the effluent hardness is not ALWAYS higher than the receiving water hardness, it may be appropriate to use the highest reported upstream receiving water hardness in Equation 2. The following equation provides fully protective water quality criteria for those metals that exhibit a concave upward relationship.

$$\text{CTR Criterion} = \left[\frac{m}{H_{rw}} \cdot (H_{eff} - H_{rw}) + 1 \right] \cdot e^{m \cdot \ln(H_{rw}) + b} \quad (\text{Equation 2})$$

Where:

H_{eff} = effluent hardness

H_{rw} = upstream receiving water hardness

b = metal- and criterion-specific constant

m = metal- and criterion-specific constant

While the effluent hardness is generally higher than the receiving water hardness, monitoring data indicates a few instances in which the receiving water hardness is higher than the effluent hardness. However, use of the lowest receiving water hardness leads to more stringent criteria than use of the highest receiving water hardness. Therefore, for lead and silver (acute) water quality criteria were calculated with a minimum observed effluent hardness of 38 mg/L as CaCO_3 and a lowest reported upstream receiving water hardness of 12 mg/L as CaCO_3 , based on 36 samples from August 2005 and July 2008.

5. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The USEPA default conversion factors for copper in freshwater are 0.96 for both the acute and the chronic criteria. Using the minimum observed effluent hardness of 38 mg/L as CaCO_3 as described in Finding 4 and the USEPA recommended dissolved-to-total translator, the applicable chronic criterion (maximum 4-day average concentration) is 4.1 $\mu\text{g/L}$ and the applicable acute criterion (maximum 1-hour average concentration) is 5.6 $\mu\text{g/L}$, as total recoverable.

The Maximum Effluent Concentration (MEC) for total copper was 14 $\mu\text{g/L}$, based on 36 samples collected between August 2005 and July 2008. Upstream receiving water data for copper was not available. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper. This resolution amends Order No. R5-2005-0030 to replace the floating effluent limitations for copper with a fixed average monthly effluent limitation (AMEL) and maximum daily effluent limitation (MDEL) for total copper of 2.6 $\mu\text{g/L}$ and 5.6 $\mu\text{g/L}$, respectively, based on CTR criteria for the protection of freshwater aquatic life.

6. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for lead. The standards for metals are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for lead in freshwater are $1.46203 - [0.145712 \times \ln(\text{hardness})]$ for both the acute and the chronic criteria. Using the minimum observed effluent hardness of 38 mg/L and the lowest reported upstream receiving water hardness of 12 mg/L as CaCO_3 as described in Finding 4, the applicable chronic criterion (maximum 4-day average concentration) is 0.38 $\mu\text{g/L}$ and the applicable acute criterion (maximum 1-hour average concentration) is 16 $\mu\text{g/L}$, as total recoverable.

The MEC for total lead was 2.1 $\mu\text{g/L}$, based on 36 samples collected between August 2005 and July 2008. Upstream receiving water data for lead was not available. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for lead. This resolution amends Order No. R5-2005-0030 to replace the floating effluent limitations for lead with a fixed AMEL and MDEL for total lead of 0.29 $\mu\text{g/L}$ and 0.66 $\mu\text{g/L}$, respectively, based on CTR criteria for the protection of freshwater aquatic life.

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7. The CTR includes hardness-dependent water quality criteria for the protection of freshwater aquatic life for nickel. The criteria for metals are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for nickel in freshwater are 0.998 for the acute criteria and 0.997 for the chronic criteria. Using the minimum observed effluent hardness of 38 mg/L as CaCO_3 as described in Finding 4, the applicable chronic criterion (maximum 4-day average concentration) is 23 $\mu\text{g/L}$ and the applicable acute criterion (maximum 1-hour average concentration) is 207 $\mu\text{g/L}$, as total recoverable.

The MEC for total nickel was 5.2 $\mu\text{g/L}$, based on 36 samples collected between August 2005 and July 2008. Upstream receiving water data for nickel was not available. Therefore, the discharge no longer exhibits a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for nickel. This resolution amends Order No. R5-2005-0030 to discontinue effluent limitations for nickel.

8. The CTR includes a hardness-dependent standard for the protection of freshwater aquatic life for silver. The CTR standards for metals are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factor for silver in freshwater is 0.85 for the freshwater acute criterion. Using the minimum observed effluent hardness of 38 mg/L and the lowest reported upstream receiving water hardness of 12 mg/L as CaCO_3 as described in Finding 4, the corresponding criterion is 0.11 $\mu\text{g/L}$, as total recoverable.

The MEC for silver was 0.39 $\mu\text{g/L}$, based on 36 samples collected between August 2005 and July 2008. Upstream receiving water data for silver was not available. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for silver. This resolution amends Order No. R5-2005-0030 to replace the floating effluent limitations for silver with a fixed AMEL and MDEL for total silver of 0.03 $\mu\text{g/L}$ and 0.11 $\mu\text{g/L}$, respectively, based on CTR criteria for the protection of freshwater aquatic life.

9. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for zinc. The criteria for zinc are presented in dissolved concentrations. USEPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for zinc in freshwater are 0.978 for the acute criteria and 0.986 for the chronic criteria. Using the minimum observed effluent hardness of 38 mg/L as CaCO_3 as described in Finding 4, the applicable chronic criterion (maximum 4-day average concentration) and the applicable acute criterion (maximum 1-hour average concentration) are both 53 $\mu\text{g/L}$, as total recoverable.

The MEC for total zinc was 60 $\mu\text{g/L}$, based on 36 samples collected between August 2005 and July 2008. Upstream receiving water data for zinc was not available. Therefore, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for zinc. This resolution amends Order No. R5-2005-0030 to replace the floating effluent limitations for zinc with a fixed AMEL and MDEL for total zinc of 34 $\mu\text{g/L}$ and 53 $\mu\text{g/L}$, respectively, based on CTR criteria for the protection of freshwater aquatic life.

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10. USEPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The recommended 4-day average (chronic) and 1-hour average (acute) criteria for aluminum are 87 µg/L and 750 µg/L, respectively. The Secondary Maximum Contaminant Level - Consumer Acceptance Limit for aluminum is 200 µg/L.

The MEC for total aluminum was 720 µg/L, based on 47 samples collected between August 2005 and July 2008. The maximum rolling annual average effluent concentration of aluminum was 226 µg/L, which occurred during the period ending 3 July 2008. Upstream receiving water monitoring data is not available. Therefore, the discharge of aluminum has the reasonable potential to cause an excursion above the chronic aquatic life criterion and secondary MCL.

Footnote L to the National Recommended Ambient Water Quality Criteria summary table for aluminum indicates that the chronic aquatic life criterion is based on studies conducted under specific receiving water conditions with a low pH (6.5 to 6.8 pH units) and low hardness (<10 mg/L as CaCO₃). In Order No. R5-2005-0030, the Regional Water Board found that the receiving stream had been measured to have a low hardness and the receiving water and the effluent have each been measured to have a pH below the minimum Basin Plan objective of 6.5, supporting the applicability of the chronic aquatic life criterion. Therefore, Order No. R5-2005-0030 established effluent limitations for aluminum. Weekly receiving water monitoring from September 2005 to July 2008 indicates that the pH in Auburn Ravine ranges from 5.9 to 8.4 and that the pH fell within the pH range of 6.5 to 6.8 on 33 occasions out of 154 sampling events, or 21 percent of the time. However, the pH of the receiving water was predominantly higher than 6.8. Monthly receiving water monitoring from September 2005 to July 2008 indicates that the hardness in Auburn Ravine ranges from 12 mg/L to 110 mg/L. While it appears that the pH of the receiving water is sometimes within the pH range under which the chronic criterion was developed, the hardness of the receiving water has not been observed within the range under which the chronic criterion was developed. Additionally, paired receiving water pH and hardness data is not available that indicates that the condition of having a pH between 6.5 and 6.8 and very low hardness occur concurrently. Thus, recent monitoring data demonstrates that the conditions under which the chronic criterion was developed are not similar to those in Auburn Ravine and it is not appropriate to apply the chronic criterion of 87 µg/L to protect aquatic life in Auburn Ravine. Therefore, this resolution amends Order No. R5-2005-0030 to discontinue the effluent limitations based on the chronic criterion of 87 µg/L.

In the absence of an applicable chronic aquatic life criterion, the most stringent water quality criterion is the Secondary MCL - Consumer Acceptance Limit for aluminum of 200 µg/L. The discharge has a reasonable potential to cause or contribute to an in-stream excursion above the secondary MCL for aluminum. Based on input from the Department of Public Health (DPH) and the fact that secondary MCLs are designed to protect consumer acceptance, effluent limitations based on secondary MCLs are applied as an annual average concentration. Therefore, this resolution amends Order No. R5-2005-0030 to establish an annual average effluent limitation of 200 µg/L for aluminum based on protection of the Basin Plan's numeric chemical constituents objective.

The discharge does not exhibit reasonable potential to exceed the acute aquatic life criterion of 750 µg/L. Therefore, effluent limitations for the protection of aquatic life are not established by this resolution.

11. Title 40 CFR 122.45(f)(1) requires effluent limitations be expressed in terms of mass, with some exceptions, and 40 CFR 122.45(f)(2) allows pollutants that are limited in terms of mass to additionally be limited in terms of other units of measurement. Order No. R5-2005-0030 includes effluent limitations expressed in terms of mass and concentration. In addition, pursuant to the exceptions to mass limitations provided in 40 CFR 122.45(f)(1), some effluent limitations are not expressed in terms of mass, such as pH and temperature, and when the applicable standards are expressed in terms of concentration (e.g., CTR criteria and MCLs) and mass limitations are not necessary to protect the beneficial uses of the receiving water.

Order No. R5-2005-0030 contained mass-based limitations for aluminum, copper, lead, silver, and zinc. The revised effluent limitations for aluminum, copper, lead, silver, and zinc are based on concentration-based water quality criteria. Additionally, these parameters are not oxygen demanding, bioaccumulative, or associated with a 303(d) listing. Therefore, this resolution will amend Order No. R5-2005-0030 to remove mass-based limitations for aluminum, copper, lead, silver, and zinc.

12. The Clean Water Act specifies that a revised permit may not include effluent limitations that are less stringent than the previous permit unless a less stringent limitation is justified based on exceptions to the anti-backsliding provisions contained in Clean Water Act sections 402(o) or 303(d)(4), or, where applicable, 40 CFR 122.44(l).

Order No. R5-2005-0030 established final mass-based effluent limitations for aluminum, copper, lead, silver, and zinc. 40 CFR 122.45(f)(1)(ii) states that mass limitations are not required when applicable standards and limitations are expressed in terms of other units of measurement. The numerical effluent limitations for aluminum, copper, lead, silver, and zinc established in this resolution are based on water quality standards and objectives, which are expressed in terms of concentration. Pursuant to 40 CFR 122.25(f)(1)(ii), expressing the effluent limitations in terms of concentration is in accordance with Federal Regulations. Although the mass limitations for aluminum, copper, lead, silver, and zinc have been removed, this does not constitute backsliding, because; (1) this resolution includes more stringent concentration-based effluent limitations for these constituents, and (2) the flow has not increased, which is the basis for calculating mass-based effluent limitations. Compliance with the concentration-based limits will ensure that significantly less mass of the pollutants is discharged to the receiving water.

This resolution also discontinues effluent limitations for nickel and relaxes effluent limitations for aluminum based on recent monitoring data and new interpretations of water quality standards.

The removal of mass-based limitations and effluent limitations for nickel, and the relaxation of effluent limitations for aluminum are consistent with the antidegradation provisions of 40

- CFR 131.12 and State Water Board Resolution 68-16. Any impact on existing water quality will be insignificant. T
13. Order No. R5-2005-0030 provided time schedules to achieve compliance with effluent limitations for copper, dibromochloromethane, dichlorobromomethane, lead, nickel, silver, and zinc by 1 December 2009. The Regional Water Board adopted Cease and Desist Order (CDO) No. R5-2005-0031 concurrently with Order No. R5-2005-0030, which provided time schedules to achieve compliance with effluent limitations for aluminum, ammonia, chloroform, manganese, methyl tert butyl ether (MTBE), nitrite, nitrate plus nitrite, and organochlorine pesticides by 1 December 2009. E N T
14. In an effort to achieve compliance with the requirements of Order No. R5-2005-0030 and CDO No. R5-2005-0031, the Discharger modified operations of the existing treatment processes, implemented a Pollution Prevention Plan (PPP), completed preliminary design for an onsite wastewater treatment plant upgrade project, and is continuing with the final design of onsite treatment upgrades. Construction of onsite upgrades, including ultraviolet disinfection and biological nitrogen removal, is proposed to be completed in March 2011. A T I
15. On 25 January 2008, the Regional Water Board rescinded CDO No. R5-2005-0031 and adopted CDO No. R5-2008-0010, which extended the time schedules for copper, dibromochloromethane, dichlorobromomethane, nickel, silver, zinc, aluminum, chloroform, nitrite, and nitrate plus nitrite to allow additional time for the Discharger to either upgrade its existing facility to meet all effluent limitations or participate in a regionalization project by either delivering secondary treated wastewater from its existing facility, or delivering raw sewage and decommissioning its existing treatment facility. Either way, participating in regionalization will result in the cessation of the current surface water discharge. V E O
16. CDO No. R5-2008-0010 must be amended to reflect the changes to Order No. R5-2005-0030 as amended by this resolution and the availability of additional information. Specifically, because nickel no longer exhibits reasonable potential and effluent limitations for nickel have been discontinued, the CDO must be amended to remove the compliance schedule for nickel. Lead was not originally included in CDO No. R5-2008-0010, though monitoring data indicates that additional time beyond 1 December 2009 is necessary to comply with the final effluent limitations for lead. Therefore, CDO No. R5-2008-0010 must be amended to include a compliance schedule for lead. CDO No. R5-2008-0010 must also be amended to revise interim limitations for aluminum, copper, zinc, and silver to reflect plant performance based on updated monitoring data from August 2005 through July 2008. R D E R
17. Issuance of this Order is exempt from the provisions of the California Environmental Quality Act (Public Resources Code section 21000, et seq.), in accordance with CWC section 15321 (a)(2), Title 14, of the California Code of Regulations.
18. The Regional Water Board has notified the Discharger and interested agencies and persons of its intent to amend waste discharge requirements for this discharge and has provided them with an opportunity to submit their written views and recommendations.
19. Any person adversely affected by this action of the Regional Water Board may petition the State Water Resources Control Board to review this action. The petition must be received by

the State Water Resources Control Board, Office of the Chief Counsel, P.O. Box 100, Sacramento, CA 95812-0100, within 30 days of the date on which this action was taken. Copies of the law and regulations applicable to filing petitions will be provided on request.

IT IS HEREBY ORDERED THAT:

1. Waste Discharge Requirements Order No. R5-2005-0030 (NPDES No. CA0077712) is amended solely to reflect recent changes in Regional Water Board interpretations, specifically in regards to implementation of criteria for aluminum and hardness-based metals by making the following modifications:

- a. Findings 15, 17, 21, 25, 30, 35, and 36 shall be amended to read as follows:

“15. Federal regulations require effluent limitations for all pollutants that are or may be discharged at a level that will cause or have the reasonable potential to cause, or contribute to an in-stream excursion above a narrative or numerical water quality standard. Based on information submitted as part of the application, in studies, and as directed by monitoring and reporting programs the Regional Board finds that the discharge does have a reasonable potential to cause or contribute to an in-stream excursion above a water quality standard for aluminum, ammonia, chloroform, copper, diazinon, dibromochloromethane, dichlorobromomethane, lead, manganese, mercury, methyl tert butyl ether (MTBE), methylene blue active substances (MBAS), nitrate plus nitrite, nitrite, organochlorine pesticides, silver, and zinc. Effluent limitations for these constituents are included in this Order.

17. **Aluminum**—Based on information included in analytical laboratory reports submitted by the Discharger, aluminum in the discharge has a reasonable potential to cause or contribute to an instream excursion above a level necessary to protect the Secondary MCL – Consumer Acceptance Limit for aluminum of 200 µg/L. The maximum observed effluent aluminum concentration was 720 µg/l, based on 47 samples collected between August 2005 and July 2008. The maximum rolling annual average effluent concentration of aluminum was 226 µg/l, which occurred during the period ending 3 July 2008. Therefore, an annual average effluent limitation of 200 µg/l is included in this Order based on protection of the Basin Plan’s numerical chemical constituents objective.

U.S. EPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum. The recommended four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 µg/l and 750 µg/l, respectively. U.S. EPA recommends that the ambient aluminum criteria are protective of the aquatic beneficial uses of receiving waters in lieu of site-specific criteria. Recent monitoring data demonstrates that the conditions under which the chronic criterion was developed are not similar to those in Auburn Ravine and it is not appropriate to apply the chronic criterion of 87 µg/l to protect aquatic life in Auburn Ravine.

21. **Copper**—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR criteria for copper. The CTR includes hardness-dependent criteria for the protection of freshwater aquatic life for copper. The criteria for copper are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for copper in freshwater are 0.960 for both the acute and the chronic criteria. Using the minimum observed effluent hardness of 38 mg/l, the corresponding criteria are 5.6 µg/l and 4.1 µg/l for the acute and chronic criteria, respectively. The maximum observed effluent copper concentration was 14 µg/l, based on 36 samples collected between August 2005 and July 2008. The Effluent Limitations for copper included in this Order are presented in total concentrations, and are based on CTR criteria for the protection of freshwater aquatic life.
25. **Lead**—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for lead. The CTR includes hardness-dependent standards for the protection of both freshwater and saltwater aquatic life for lead. The standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for lead in freshwater are $1.46203 \cdot [0.145712 \cdot \ln(\text{hardness})]$ for both the acute and the chronic criteria. Using the minimum observed effluent hardness of 38 mg/l and the lowest reported upstream hardness of 12 mg/l, the corresponding standards are 16 µg/l and 0.38 µg/l for the acute and chronic criteria, respectively. The maximum observed effluent lead concentration was 2.1 µg/l, based on 36 samples collected between August 2005 and July 2008. The Effluent Limitations for lead included in this Order are presented in total concentrations, and are based on the CTR standards for the protection of freshwater aquatic life.
30. **Nickel**—Based on information included in analytical laboratory results submitted by the Discharger, the discharge does not have a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for nickel. The CTR includes hardness-dependent standards for the protection of both freshwater and saltwater aquatic life for nickel. Freshwater aquatic habitat is a beneficial use of the receiving water. The standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for nickel in freshwater are 0.998 for the acute criteria and 0.997 for the chronic criteria. Using the minimum observed effluent hardness of 38 mg/l, the corresponding standards are 207 µg/l and 23 µg/l for the acute and chronic criteria, respectively. The maximum observed effluent nickel concentration was 5.2 µg/l, based on 36 samples collected between August 2005 and July 2008. Therefore, the discharge does not exhibit reasonable potential to exceed water quality criteria for the protection of aquatic life and effluent limitations for nickel are not included in this Order.

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35. **Silver**—Based on information included in analytical laboratory results submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for silver. The CTR includes hardness-dependent standards for the protection of freshwater aquatic life for silver. Freshwater aquatic habitat is a beneficial use of the receiving water. The CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factor for silver in freshwater is 0.85 for the instantaneous maximum criterion. Using the minimum observed effluent hardness of 38 mg/l and the lowest reported upstream receiving water hardness of 12 mg/l, the corresponding standard is 0.11 µg/l. The maximum observed effluent silver concentration was 0.39 µg/l, based on 36 samples collected between August 2005 and July 2008. Effluent Limitations for silver (in total concentrations) are included in this Order and are based on the CTR standards for the protection of freshwater aquatic life.

36. **Zinc**—Based on information included in analytical laboratory reports submitted by the Discharger, the discharge has a reasonable potential to cause or contribute to an in-stream excursion above the CTR standards for zinc. The CTR includes hardness-dependent standards for the protection of both freshwater and saltwater aquatic life for zinc. The hardness-dependent CTR standards for metals are presented in dissolved concentrations. U.S. EPA recommends conversion factors to translate dissolved concentrations to total concentrations. The conversion factors for zinc in freshwater are 0.978 for the acute criteria and 0.986 for the chronic criteria. Using the minimum observed effluent hardness of 38 mg/l, the corresponding standards are 53 µg/l and 53 µg/l for the acute and chronic criteria, respectively. The maximum observed effluent zinc concentration was 60 µg/l, based on 36 samples collected between August 2005 and July 2008. Effluent Limitations for zinc (in total concentrations) are included in this Order and are based on the CTR standards for the protection of freshwater aquatic life.”

b. The effluent limitations contained at section B.4 shall be amended to read as follows:

“B. Effluent Limitations—Discharge to Auburn Ravine (001):

4. The effluent shall not exceed the following limitations (from 1 December 2009 forward):

<u>Constituents</u>	<u>Units</u>	<u>Average Monthly Attach. B</u>	<u>Average 4-Day Attach. C</u>	<u>Average Daily</u>	<u>Average 1-Hour Attach. D</u>	<u>Instantaneous Maximum</u>
Ammonia	mg/L					
(as N)	lbs/day ¹					
Chlorine, Total Residual	µg/l	--	0.01	--	0.02	--
	lbs/day	--	0.15	--	0.26	--
Chloroform	µg/L	1.1	--	--	--	--
	lbs/day	0.015	--	--	--	--
Copper	µg/l	2.6	--	5.6	--	--
(total recoverable)						
Dibromochloromethane	µg/l	0.41	--	0.84	--	--
	lbs/day	0.0057	--	0.012	--	--

Dichlorobromomethane	µg/l	0.56	--	1.0	--	--	T
	lbs/day	0.0078	--	0.014	--	--	
Lead	µg/l	0.29	--	0.66	--	--	E
(total recoverable)							
Manganese	µg/l	50	--	--	--	--	N
(total recoverable)	lbs/day	0.70	--	--	--	--	
Methyl tert butyl ether	µg/l	5	--	--	--	--	T
(MTBE)	lbs/day	0.070	--	--	--	--	A
Methylene blue active substances	µg/l	500	--	--	--	--	
(MBAS)	lbs/day	70	--	--	--	--	
Nitrite (as N)	mg/L	1	--	--	--	--	
	lbs/day	14	--	--	--	--	
Nitrate + Nitrite	mg/L	10	--	--	--	--	
(as N)	lbs/day	140	--	--	--	--	
Silver	µg/l	0.03	--	0.11	--	--	
(total recoverable)							
Zinc	µg/l	34	--	53	--	--	
(total recoverable)							

¹ Based upon a design treatment capacity of 1.67 mgd (x mg/l X 8.345 X 1.67 mgd = y lbs/day)

² The mass limit (lb/day) for ammonia shall be equal to the concentration limit (from Attachments) multiplied by the design flow of 1.67 mgd and the unit conversion factor of 8.345 (see footnote 1 for equation).

- c. An effluent limitation for aluminum shall be added as section B.11 and shall read as follows:

“B. Effluent Limitations—Discharge to Auburn Ravine (001):

11. Aluminum, Total Recoverable¹. For a calendar year, the annual average effluent concentration shall not exceed 200 µg/L.

- d. Attachments E through I shall be deleted in their entirety.

2. Cease and Desist (CDO) Order No. R5-2008-0010 is amended to remove the compliance schedule for nickel, include a compliance schedule for lead, and revise interim limitations for aluminum, copper, zinc, and silver to reflect plant performance based on updated monitoring data from August 2005 through July 2008 by making the following modifications:

- a. Findings 2, 3, 6, 10,12, and 15 shall be amended to read as follows:

“2. WDRs Order No. R5-2005-0030 includes limits for aluminum, ammonia, chloroform, copper, dibromochloromethane, dichlorobromomethane, manganese, methyl tert butyl ether (MTBE), lead, nitrite, nitrate-plus-nitrite, silver, and zinc as contained in Effluent Limitations sections B.1, B.2, B.4, and B.11, which require the following:

¹ Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA’s Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.

<u>Constituents</u>	<u>Units</u>	<u>Average Monthly 200²</u>	<u>Average 4-Day</u>	<u>Average Daily</u>	<u>Instantaneous Maximum</u>
Aluminum ¹	ug/L		--	--	--
Ammonia (as N)	mg/l	Attach. B	Attach. C	--	Attach. D
	lbs/day ³	4	4	--	One-Hour Average 4
Chloroform	ug/L	1.1	--	--	--
	lbs/day	0.015	--	--	--
Copper (total recoverable)	ug/L	2.6	--	5.6	--
Dibromochloromethane	ug/L	0.41	--	0.84	--
	lbs/day ²	0.0057	--	0.012	--
Dichlorobromomethane	ug/L	0.56	--	1.0	--
	lbs/day ²	0.0078	--	0.014	--
Lead (total recoverable)	µg/L	0.29	--	0.66	--
Manganese (total recoverable)	ug/L	50	--	--	--
	lbs/day ²	0.70	--	--	--
MTBE	ug/L	5	--	--	--
	lbs/day ²	0.070	--	--	--
Nitrite (as N)	mg/L	1	--	--	--
	lbs/day	14	--	--	--
Nitrate + Nitrite (as N)	mg/l	10	--	--	--
	lbs/day	140	--	--	--
Organochlorine pesticides	ug/L	--	--	--	ND ⁵
Silver (total recoverable)	ug/L	0.03	--	0.11	--
Zinc (Total Recoverable)	ug/L	34	--	53	--

- ¹ Compliance with the final effluent limitations for aluminum can be demonstrated using either total or acid-soluble (inductively coupled plasma/atomic emission spectrometry or inductively coupled plasma/mass spectrometry) analysis methods, as supported by USEPA's Ambient Water Quality Criteria for Aluminum document (EPA 440/5-86-008), or other standard methods that exclude aluminum silicate particles as approved by the Executive Officer.
- ² Applied as an annual average effluent limitation.
- ³ Based on design treatment capacity of 1.67 mgd, $[(x \text{ ug/l})(1 \text{ mg}/1000 \text{ ug})(8.345)(1.67 \text{ mgd}) = y \text{ lbs/day}]$
- ⁴ The mass limit (lbs/day) shall be equal to the concentration limit (from corresponding Attachment, for corresponding period) multiplied by the design flow of 1.67 mgd and the unit conversion factor 8.345 and divided by 1000 ug/mg (see footnote 1 for equation)
- ⁵ The non-detectable (ND) limitation applies to each individual pesticide. No individual pesticide may be present in the discharge at detectable concentrations. The Discharger shall use EPA standard analytical techniques with the lowest possible detectable level for organochlorine pesticides with a maximum acceptable detection level of 0.05 ug/l.

3. WDRs Order No. R5-2005-0030 included a schedule for achieving compliance with the effluent limitations for copper, dibromochloromethane, dichlorobromomethane, lead, silver and zinc by 1 December 2009. The WDRs expire on 1 March 2010.

6. The Discharger has completed preliminary design for an onsite WWTP upgrade project to comply with final effluent limitations for aluminum, chloroform, copper, dibromochloromethane, dichlorobromomethane, lead, nitrites, nitrate-plus-nitrite, silver and zinc. The Discharger is continuing with the final design of onsite treatment upgrades. Construction of on-site plant upgrades, including ultraviolet disinfection and biological nitrogen removal process, is proposed to be completed in March 2011. The new facilities are proposed to reduce effluent concentrations of chloroform, dibromochloromethane, dichlorobromomethane, nitrites and nitrates-plus-nitrites in order for the Discharger to comply with effluent limitations.
10. In accordance with California Water Code (CWC) Section 13385(j)(3), the Regional Water Board finds that the Discharger is not able to consistently comply with the effluent limitations for aluminum, chloroform, copper, dibromochloromethane, dichlorobromomethane, lead, nitrites, nitrate-plus-nitrite, silver and zinc. The schedules for completing the actions necessary to achieve full compliance exceed the 1 December 2009 compliance dates in the WDRs Order No. R5-2005-0030 and CDO No. R5 2005 0031. Additional time is necessary to finalize a decision regarding regionalization, then complete onsite plant upgrades and site-specific studies, or discharge into a regional wastewater collection system. New time schedules are necessary in a CDO for all the constituents listed above. These limitations were new requirements that became applicable after the effective date of adoption of the waste discharge requirements, and after 1 July 2000, for which new or modified control measures are necessary in order to comply with the limitation, and the new or modified control measures cannot be designed, installed, and put into operation within 30 calendar days.
12. Compliance with this Order exempts the Discharger from mandatory penalties for violations of effluent limitations for copper, dibromochloromethane, dichlorobromomethane, lead, silver and zinc, in accordance with CWC section 13385(j)(3). CWC section 13385(j)(3) requires the Discharger to prepare and implement a pollution prevention plan pursuant to section 13263.3 of the California Water Code. Therefore, a pollution prevention plan will be necessary for copper, dibromochloromethane, dichlorobromomethane, nickel, silver and zinc, in order to effectively reduce the effluent concentrations by source control measures.
15. The compliance time schedule in this Order includes interim effluent limitations for aluminum, chloroform, copper, dibromochloromethane, dichlorobromomethane, lead, nitrites, nitrate-plus-nitrite, silver and zinc. Interim effluent limitations typically consist of a daily effluent concentration derived using sample data provided by the Discharger. Existing interim average daily limitations for dibromochloromethane and dichlorobromomethane, as established in WDR Order No. R5-2005-0031, are included in this Order. New interim average daily limitations for chloroform, nitrites, and nitrate-plus-nitrite, based on effluent monitoring data demonstrating actual treatment plant performance from April 2007 to November 2007, are also included in this Order. New interim average daily limitations for aluminum, copper, lead, silver, and zinc, based on effluent monitoring data demonstrating actual treatment plant

performance from August 2005 to July 2008, are also included in this Order. To maintain consistency with interim limitations established in existing WDR Order No. R5-2005-0031, interim limitations for all constituents described above are established as average daily effluent limitations. In developing the interim limitations, when there are ten sampling data points or more, sampling and laboratory variability is accounted for by establishing interim limits that are based on normally distributed data where 99.9% of the data points will lie within 3.3 standard deviations of the mean (Basic Statistical Methods for Engineers and Scientists, Kennedy and Neville, Harper and Row). When there are less than ten sampling data points available, the Technical Support Document for Water Quality- Based Toxics Control ((EPA/505/2-90-001), TSD) recommends a coefficient of variation of 0.6 be utilized as representative of wastewater effluent sampling. The TSD recognizes that a minimum of ten data points is necessary to conduct a valid statistical analysis. The multipliers contained in Table 5-2 of the TSD are used to determine a daily limitation based on a long-term average objective. In this case, the long-term average objective is to maintain, at a minimum, the current plant performance level. Thus, when there are less than ten sampling points for a constituent, interim limitations are based on 3.11 times the maximum observed effluent concentration to obtain the daily interim limitation (TSD, Table 5-2). If the statistically-projected interim limitation is less than the maximum observed effluent concentration, the interim limitation is established as the maximum observed concentration.

b. Provisions 1 and 3 shall be amended to read as follows:

- “1. The City of Auburn shall comply with the following time schedule to assure compliance with the aluminum, ammonia, chloroform, copper, lead, manganese, methyl tert butyl ether (MTBE), nitrite, nitrate +nitrite, organochlorine pesticides, silver, and zinc Effluent Limitations contained in Waste Discharge Requirements Order No. R5-2005-0030:

<u>Task</u>	<u>Compliance Date</u>
Implement PPP ¹ Progress Reports ²	1 February 2008 1 March and 1 September of each year
Submit Formal Decision For Compliance ³ Onsite WWTP Improvements and Regionalization	1 June 2008

¹ The Discharger shall continue to implement its Pollution Prevention Plan shall for all constituents listed in Provision 1 above and shall meet the requirements specified in California Water Code Section 13263.

² The progress reports shall detail what steps have been implemented towards achieving compliance with waste discharge requirements, including construction progress regarding onsite WWTP improvements and/or regionalization, whichever is applicable. The progress reports shall also evaluate the effectiveness of the implemented treatment and pollution prevention measures and assess whether additional measures are necessary to meet the time schedule.

³ “Formal Decision for Compliance” means formal written statement submitted to Regional Water Board Executive Officer regarding option Discharger has selected for compliance.

Achieve Full Compliance with ammonia,
manganese, MTBE, and organochlorine
pesticides final effluent limitations

1 December 2009

If Formal Decision for Compliance includes
Onsite WWTP improvements, achieve Full Compliance
with aluminum, chloroform, copper,
dibromochloromethane, dichlorobromomethane, lead,
nitrite, nitrate-plus-nitrite, silver, and zinc final effluent
limitations

16 March 2011

If Formal Decision for Compliance includes
Regionalization, achieve Full Compliance
with aluminum, chloroform, copper,
dibromochloromethane, dichlorobromomethane, lead,
nitrite, nitrate-plus-nitrite, silver, and zinc final effluent
limitations

31 January 2013

3. *The following interim effluent limitations shall be effective immediately, and shall remain in effect through either 16 March 2011 or 31 January 2013, as applicable in accordance with Provision 1 above, or when the Discharger is able to come into compliance with the final effluent limitations, whichever is sooner.*

Parameter	Average Daily Effluent Limitation
Aluminum	708 ug/l
Chloroform	57.3 ug/l
Copper (total recoverable)	14 ug/l
Dibromochloromethane	2.2 ug/l
	0.031 lbs/day
Dichlorobromomethane	13 ug/l
	180 lbs/day
Lead (total recoverable)	2.2 ug/l
Nitrites	1.10 mg/l
Nitrate plus Nitrite	16.37 mg/l
Zinc (total recoverable)	74 ug/l
Silver (total recoverable)	4.1 ug/l

I, Pamela C. Creedon, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of a Resolution adopted by the California Regional Water Quality Control Board, Central Valley Region, on XX April 2009.

RESOLUTION NO. R5-2009-XXXX
CITY OF AUBURN
WASTEWATER TREATMENT PLANT
PLACER COUNTY

ATTACHMENT A

PAMELA C. CREEDON, Executive Officer